Eucalyptus megasepala A.R.Bean (Myrtaceae), a new species from Queensland allied to *E. tetrodonta* F.Muell.

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Summary

Bean, A.R. (2006), *Eucalyptus megasepala* A.R.Bean (Myrtaceae), a new species from Queensland allied to *E. tetrodonta* F.Muell. (Myrtaceae). *Austrobaileya* 7(2): 305–310. Full descriptions, illustrations and distribution maps are provided for both *Eucalyptus tetrodonta* and *E. megasepala* sp. nov., the latter found in north-east Queensland.

Key Words: Myrtaceae, *Eucalyptus megasepala*, *Eucalyptus tetrodonta*, taxonomy, new species, Australian flora, Queensland flora, identification key

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Introduction

Eucalyptus tetrodonta F.Muell. is a very common species occurring right across the north of Australia, from the northern Kimberley of Western Australia to north-eastern Queensland. Frequently it is a dominant or co-dominant species of tropical woodlands or open-forest. It is commonly called Darwin stringybark, stringybark, or sometimes messmate. It is a useful timber tree species. The heartwood is pale red, fairly hard, dense, and moderately durable. It is used for poles and general house construction (Boland *et al.* 1984).

Eucalyptus tetrodonta sens. lat. is highly distinctive in the field because of its grey stringy bark (the only species with that bark type in its area of occurrence, except *Corymbia jacobsiana*) and long grey-green falcate leaves. It is also readily distinguished in the herbarium, because of its 3-flowered axillary inflorescences, opposite or sub-opposite adult leaves and buds with conspicuous free sepals.

Hill & Johnson (1998) recognised its taxonomic isolation by placing it into a new, monotypic but informal section (*Eucalyptus* sect. '*Fibraria*'). This section does not, and was not intended to conform to the rules of the ICBN. Brooker (2000) maintained *E. tetrodonta* in a monotypic section, which he named *Eucalyptus* sect. *Complanatae* Brooker, validly published under the ICBN rules.

Boland *et al.* (1984) documented an unusual form of *Eucalyptus tetrodonta* known from near Laura in north Queensland. This taxon has been collected numerous times from numerous locations since that time. It is described here as *E. megasepala*. Surprisingly, Hill & Johnson (1998) made no mention of variation within *E. tetrodonta*, or the possibility of undescribed taxa within it. At least one of the specimens that they cited under *E. tetrodonta* belongs in *E. megasepala*. Their description of *E. tetrodonta* included the following erroneous statements: the adult leaves 'disjunct', the lateral veins 'at 30° to the midrib', the mature buds 10–25 mm long, the peduncles 1–5 mm long and the stamens as being arranged 'in 4 fascicles'.

Materials and methods

When the leaves are more or less evenly spaced along the branchlet, the often used terms 'alternate' or 'alternating' are suitable. The term 'disjunct' has been used in taxonomic eucalypt descriptions only by L.A.S. Johnson and his co-authors. This term, as applied by those authors, has the same meaning as 'alternate', judging by its usage in the great majority of species descriptions.

The arrangement of the adult leaves for *E. tetrodonta* was described by Brooker & Kleinig (1994) as 'alternating', when in fact it is either 'sub-opposite' or opposite.

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Detailed descriptions, illustrations and distribution maps are provided for both *E. tetrodonta* and *E. megasepala*. Stigma morphology follows Boland & Sedgley (1986).

Taxonomy

Eucalyptus tetrodonta F.Muell., *J. Proc. Linn. Soc., Bot.* 3: 97 (1859). **Type:** [Northern Territory] entrance to Victoria River, September 1855, *F. Mueller* (lecto: MEL *n.v.*, photo!), *fide* Maiden (1921).

***Illustrations*:** Brooker & Kleinig (1994: 139); Milson (2000: 230–231); Boland *et al.* (1984: 241).

Tree 10–20 metres high, occasionally to 30 metres, lignotuberous. Bark persistent throughout, fibrous to stringy, grey when exposed. Juvenile leaves opposite, ovate to broad-lanceolate, 15–30 × 3.5–10 cm, concolorous, petiolate. Adult leaves lanceolate or falcate, 9.5–19.5 × 1.5–3.5 cm, opposite or sub-opposite, leathery, concolorous, dull; apex attenuate, base cuneate to attenuate, lateral veins at 45–60° to the midrib, intramarginal vein present; reticulation sparse or moderately dense, with small island oil glands; petioles 12–18 mm long, flattened. Inflorescences axillary, unbranched, 3-flowered, floral bracts sometimes present, *c.* 3 mm long; peduncles erect or recurved, 6–16 mm long, 1.9–2.9 mm wide, terete to angular; pedicels 2.5–5 mm long, angular. Mature buds obovoid to globular, 8.5–11.5 mm long, 6.5–10 mm in diameter. Hypanthium unribbed to 2-ribbed; sepals 4, 1–2.5 mm long, persistent, lower part fused to hypanthium, upper part free; operculum hemispherical, smooth to faintly ribbed; stamens white, inflexed, all fertile, arranged in a continuous ring on the staminophore. Anthers oblong, versatile, dorsifixed, opening in longitudinal slits. Style terete, stigma blunt. Ovary 3-locular. Fruiting peduncles 1.8–3 mm wide, terete or angular; fruits cupular, cylindrical or truncate-ovoid, circular in cross-section, 15–20 mm long, 11–14 mm diameter, longitudinal ribs absent or 2, disc descending, valves 3, enclosed or at rim level. Seeds grey, ± circular, concavo-convex, surface not reticulate, hilum ventral. Chaff brown, cuneate to cuboid. **Fig. 1.**

***Additional selected specimens examined*: Queensland.** Burke District: 45 km NW of Torrens Creek, Apr 1993, *Thompson HUG390 et al.* (BRI); Glenore, S of Normanton, May 1998, *Wannan839* (BRI). Cook District: above Little Laura River, SSW of Laura, Jul 1990, *Bean 1691* (BRI); 8.4 km S of 'Burlington' crossroads, N of Mt Surprise, Aug 1997, *Bean 12232* (BRI, CANB); 46 miles [74 km] by road from Laura towards Coen at Hann River crossing, Aug 1973, *Brooker 4054* (BRI, CANB); Bulleringa N.P., 80 km NW of Mt Surprise, Apr 1998, *Forster PIF22676 & Booth* (BRI, DNA, MEL); near Lynd River, on Dimbulah–Normanton road, Jul 1999, *Fox IDF412 & Middleton* (BRI); 11.3 km E of Wenlock River crossing on road to Iron Range, Aug 1977, *Hind 2039 & Ingram* (BRI, CANB, NSW); 'Kalpowar', *c.* 45 km N of homestead towards outstation, Aug 1978, *Kanis 1988* (BRI, CANB); 45 km along Palmerville road, from Cape York development road, Jul 1994, *Slee et al. 3627* (BRI, CANB, MEL). **Northern Territory.** Cutta Cutta, Jul 1990, *Evans 3274* (BRI, CANB, DNA, MEL); 40 km E of Calvert River crossing, Jun 1974, *Maconochie 2042* (BRI, CANB, DNA, NSW); Frenchmans Landing, NW of Peppimenaiti, Aug 1988, *Orr 217* (CANB, DNA); 2 km E of Borroloola, Jun 1988, *Smith 1224* (DNA); Oenpelli road, 2.25 km NE of Ja Ja, Aug 1980, *Waterhouse UNSW10547* (BRI); Yapilika, Melville Island, Sep 1986, *Wilson 10* (DNA). **Western Australia.** 20 miles [32 km] NW of Beverley Springs Station, Jul 1973, *Aplin 5678* (BRI, CANB); 24 miles [40 km] SE of Kimberley Research Station, Jul 1952, Perry 2939 (CANB, DNA); E of Kununurra, Aug 1978, *Petheram 112* (DNA); 12 miles [20 km] NE of Kalumburu Mission, Sep 1954, *Speck 4893* (CANB, DNA).

***Distribution and habitat*:** *Eucalyptus tetrodonta* is widespread from the northern Kimberley of Western Australia to Cooktown in Queensland, and inland to roughly the 800 mm isohyet (**Map 1**). It is most often recorded from sandy soils, on plains, creekbanks and hillsides, but also on laterite. It is associated with wide variety of other eucalypt species, but especially *E. miniata*.

***Phenology*:** Flowers are borne from July to October; fruits from October to April.

***Notes*:** The protologue for *Eucalyptus tetrodonta* cited specimens collected by Cunningham and Armstrong, in addition to Mueller's broad description of where he saw the species. However, Hill & Johnson (1998) correctly pointed out that the Cunningham and Armstrong citations were added by the editor of the journal in London, and that Mueller did not have access to those specimens.

Maiden (1921) effectively lectotypified *Eucalyptus tetrodonta* with the words "the type came from the entrance to the Victoria

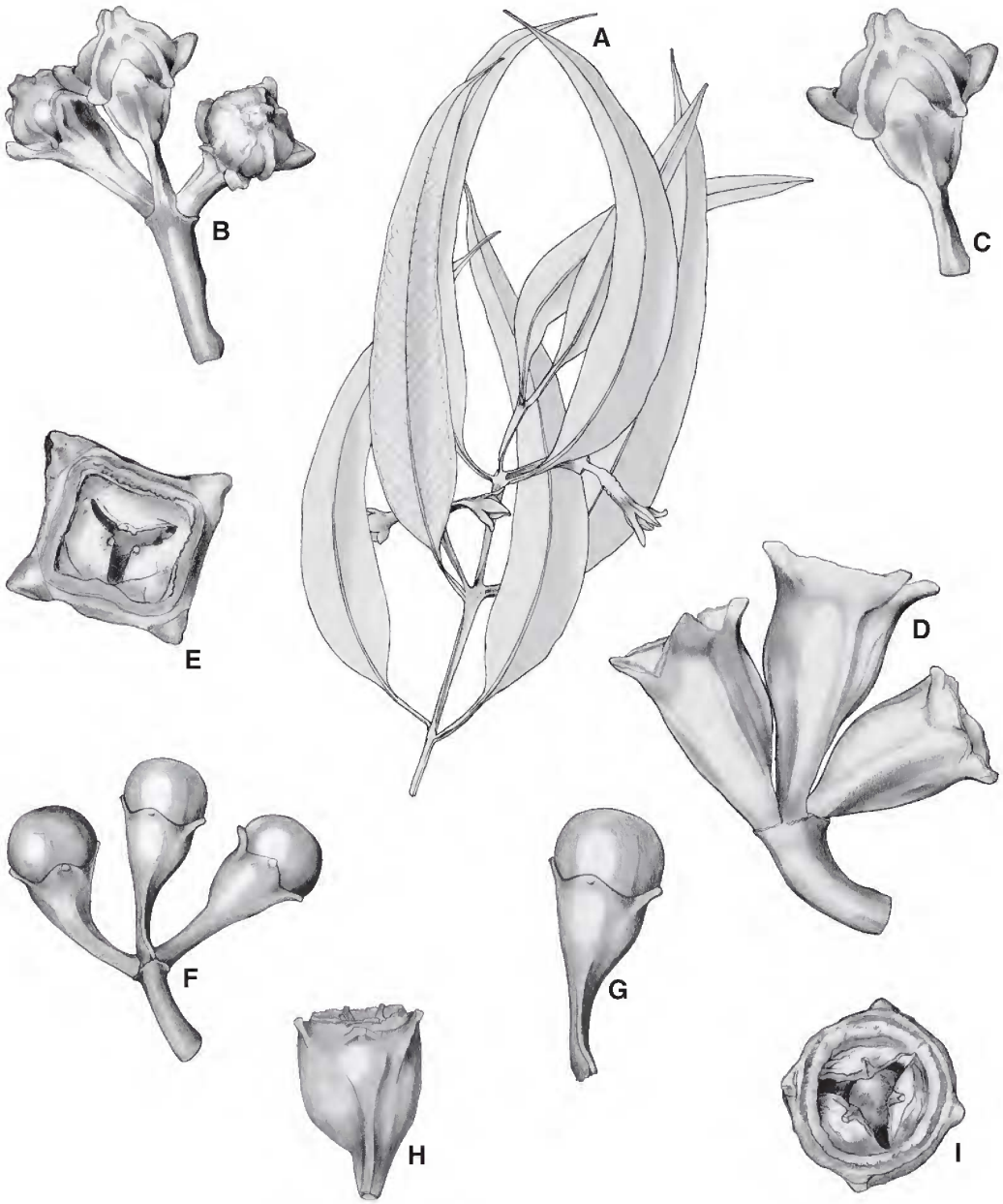

Fig. 1. ***Eucalyptus megasepala.*** A. branchlet showing opposite to sub-opposite leaves and axillary inflorescences × 0.5. B. single umbel of buds, close to maturity × 1.5. C. bud, showing the conspicuously ribbed operculum and the large sepals × 2. D. single umbel of fruits × 1.5. E. fruit viewed from above × 2. ***Eucalyptus tetrodonta.*** F. single umbel of buds, close to maturity × 1.5. G. bud, showing the unribbed operculum and the relatively small sepals × 2. H. single fruit × 1.5. I. fruit viewed from above × 2. A, *Forster PIF10108*; B–C, *Hyland 5178*; D–E, *Clarkson 9725*; F–G, *Clarkson 10563*; H–I, *Milson 1193* (all BRI). Del. W.Smith.

River and the elevated sterile districts of Arnhem's Land. Stringybark. (Mueller)". The latter part of this statement is taken from the protologue, but the reference to "entrance to the Victoria River" can only have come from the label of Mueller's specimen at MEL. The lectotype bears fruits only, and the fragment packet contains fruits only (V. Stajsic pers. comm.). There is a photograph of it in Blake (1953: plate 9). Chippendale (1988) incorrectly referred to this specimen as the holotype.

***Conservation status*:** Common and widespread.

Eucalyptus megasepala A.R.Bean, **species nov.** ab *E. tetrodonta* alabastris pervalde 4-vel 8-costatis, 12–17 × 10–14 mm sub maturitate; operculo conico usque apiculato; sepalis 5–9 mm longis; pedunculis ubi fructiferis valde complanatis, 4–7.5 mm latis, fructibus in sectione transversali ± quadratis, costis longitudinalibus 4 differt. **Typus:** Queensland. Cook District: 7 km W of Jowalbinna, 5 July 1990, *A.R. Bean 1732* (holo: BRI; iso: CANB, NSW, distribuendi).

Tree 10–20 metres high, lignotuberous. Bark persistent throughout, fibrous to stringy, grey when exposed. Juvenile leaves unknown. Adult leaves lanceolate or falcate, 10.5–22 × 1.5–3.2 cm, opposite or sub-opposite, leathery, concolorous, dull; apex attenuate, base cuneate to attenuate, lateral veins at 45–60° to the midrib, intramarginal vein present; reticulation sparse or moderately dense, with small island oil glands; petioles 10–22 mm long, terete or somewhat flattened. Inflorescences axillary, unbranched, 3-flowered, floral bracts sometimes present, 5–7 mm long; peduncles erect or recurved, 9–21 mm long, 3–5 mm wide, strongly flattened; pedicels 3–9 mm long, flattened. Mature buds broadly ellipsoid, 12–17 mm long, 10–14 mm diameter. Hypanthium strongly 4-ribbed, sometimes 8-ribbed; sepals 4, 5–9 mm long, persistent, lower part fused to hypanthium, upper part free; operculum conical to apiculate, strongly ribbed; stamens white, inflexed, all fertile, annular on the staminophore. Anthers oblong, versatile, dorsifixed, opening in longitudinal slits. Style terete, stigma blunt. Ovary 3-locular. Fruiting peduncles 4–7.5 mm wide, strongly flattened; fruits cupular, cylindrical or truncate-ovoid, quadrangular in cross-section, 18–23 mm long, 12–16 mm in diameter, longitudinal ribs 4, disc descending, valves 3, enclosed or at rim level. Seeds grey, ± circular, concavo-convex, *c.* 3 mm long, part of margin with rudimentary wing, surface not reticulate, hilum ventral. Chaff brown, cuneate to cuboid. **Fig. 1**.

***Additional selected specimens examined*: Queensland.** Cook District: 41.5 km from Almaden towards Mt Surprise, Jun 1987, *Bean 599* (BRI); 15 km from Wrotham Park–Chillagoe road, towards 'Blackdown', Jan 1993, *Bean 5585 & Forster* (BRI); Wenlock, Batavia River, Jul 1948, *Brass 19723* (BRI, CANB); 17.3 km N of the Archer River crossing on the Peninsula Development road, Aug 1983, *Clarkson 4864* (BRI, CANB, NSW, QRS); 6.7 km E of the Peninsula Development road on the road to Iron Range, Jul 1985, *Clarkson 6120* (BRI, CANB, DNA, NSW, PERTH, QRS); *c.* 14 km from Laura on Cairns road, Apr 1975, *Craven 3236* (BRI, CANB); Killarney Road, 12 km N of Kimba–Laura road, Jun 1988, *Dalliston CC54* (BRI, CANB); 10 km along road to Leo Creek mine, McIlwraith Range, Jun 1992, *Forster PIF10108* (BRI); Pannikin Springs area, Blackdown Station, May 1999, *Forster PIF24374 & Booth* (BRI); Wrotham Park station, *c.* 10 miles [16 km] S of the Mitchell River, May 1971, *Gill s.n.* (BRI [AQ3821]); Kennedy road N of Morehead River, Jul 1965, *Gittins 985* (BRI); 28 miles [45 km] NW of Laura, Jun 1971, *Hyland 5177* (BRI, CANB, QRS); between Maytown and Spring Creek, Jun 1975, *Hyland 8277* (BRI, CANB, QRS); Iron Mountain, 8 km S of Emuford, Mar 1990, *Liddle s.n.* (BRI [AQ484358], CANB); 5 km S of Laura road, *c.* 68 km SW of Cooktown, Apr 1975, *McDonald 1634 & Batianoff* (BRI); *c.* 20 miles [32 km] NW of Chillagoe, Nov 1965, *Pedley 1828* (BRI); near Normanby River, 32 miles [51 km] ENE of Laura, Jun 1968, *Pedley 2636* (BRI, CANB).

***Distribution and habitat*:** *Eucalyptus megasepala* is endemic to Queensland, and has a considerable north-south range from south-west of Iron Range to near Irvinebank (**Map 2**). It is most often recorded from sandstone ridges, plateaux or outcrops, but also on gently undulating areas with sandy-loam soils. In sandstone areas, it is commonly associated with *Corymbia stockeri* subsp. *stockeri, C. pocillum* or *C. gilbertensis*; on more gentle landforms, it grows with *E. platyphylla, E. cullenii* and *C. stockeri* subsp. *peninsularis*.

***Notes*:** While *Eucalyptus megasepala* and *E. tetrodonta* are clearly closely related sister taxa, they are as distinct, or more distinct, than several other eucalypt pairs currently recognised at species rank e.g. *E. biturbinata*

and *E. longirostrata; E. lirata* and *E. similis; E. pleurocarpa* and *E. extrica; E. notabilis* and *E. resinifera; E. seeana* and *E. interstans; E. moluccana* and *E. microcarpa; Corymbia pocillum* and *C. ellipsoidea; C. dallachiana* and *C. aparrerinja*. They are very readily distinguishable with either budding or fruiting material.

Species rank for *Eucalyptus megasepala* is further supported by the fact that although it often occurs in the same general vicinity as *E. tetrodonta*, its habitat is different, and there is no evidence of intergradation with the related species.

Eucalyptus megasepala is known only from Queensland. In the Northern Territory, *E. tetrodonta* appears to be quite variable, and additional taxa may exist within it.

The two species are distinguished by the following key:

Mature buds 8.5–12 × 6.5–10 mm; sepals 1–3 mm long; buds smooth or with very faint ribs, operculum hemispherical; fruiting peduncles 1.8–3 mm wide, terete or angular; fruits circular in cross-section, longitudinal ribs absent or 2 . . . . . **E. tetrodonta**

Mature buds 12–17 × 10–14 mm; sepals 5–9 mm long; buds very strongly 4- or 8-ribbed, operculum conical to apiculate; fruiting peduncles 4–7.5 mm wide, strongly flattened; fruits ± square in cross-section, longitudinal ribs 4 . . . . . **E. megasepala**

***Phenology*:** Flowers are borne from April to July; fruits from July to January. The phenology of *Eucalyptus tetrodonta* (in Queensland) and *E. megasepala* is significantly different, as is the habitat. I have observed both species in the Laura area; trees of *E. tetrodonta* (*Bean 1691*) were on sandy alluvium, and bore mature buds but no flowers; trees of *E. megasepala* (*Bean 1732*) were on a sandstone outcrop, and were in full flower. Judging by the extensive herbarium collections at BRI, *E. megasepala* flowers earlier than *E. tetrodonta* in any given location, and July is the only month when both species are in flower. It seems clear that the correlations between morphology–habitat and morphology–phenology apply throughout the ranges of the species in Queensland.

***Conservation status*:** Common and widespread.

***Etymology*:** From the Greek *mega* (large) and *sepalum* (sepal). This refers to the sepals of this species that are much larger than those on the related *E. tetrodonta*.

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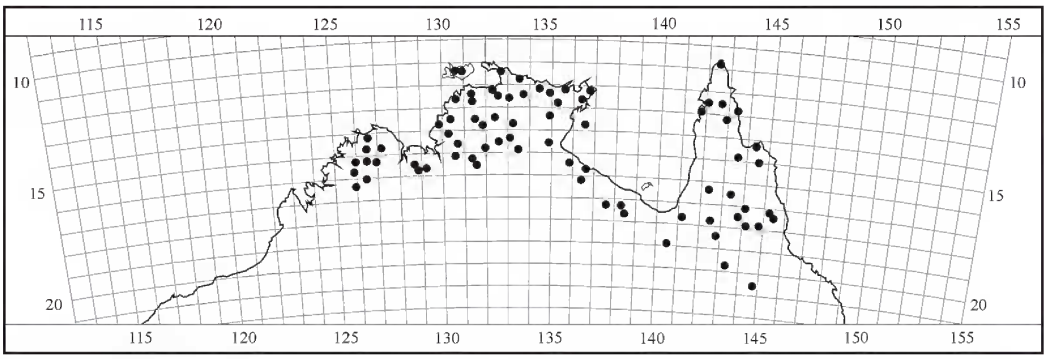
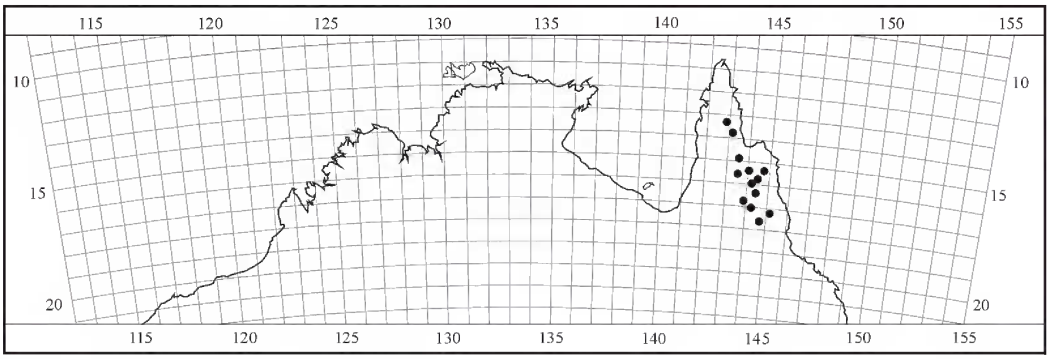


Map1. Distribution of *Eucalyptus tetradonta* ● .



Map2. Distribution of *Eucalyptus megasepala* ● .

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